

Amendments to the Claims

Please amend the claims to read as follows:

1. (Original) A cardiac isolation catheter insertable within the vena cava of a mammal, said catheter comprising

- (a) a hollow tubular body having a venous blood flow lumen extending longitudinally therein, a proximal end, a distal end, a proximal port, and a distal port;
- (b) a distal vessel seat attached to said body; and
- (c) a proximal vessel seat attached to said body;

wherein said cardiac isolation catheter is positionable within the vena cava of the mammal such that one vessel seat is positioned in the superior vena cava of the mammal between the right atrium and the junction of the brachiocephalic veins and the other vessel seat is positioned in the inferior vena cava between the right atrium and the hepatic veins, wherein said distal port is located distally with respect to said distal vessel seat, and wherein said proximal port is located proximally with respect to said proximal vessel seat, whereby blood in the junction of the brachiocephalic veins and blood in the hepatic veins is in fluid communication with said venous blood flow lumen by way of said ports.

2. (Original) The cardiac isolation catheter of claim 1, wherein at least one of said distal vessel seat and said proximal vessel seat comprises a raised surface extending circumferentially about said body.

3. (Original) The cardiac isolation catheter of claim 2, wherein said vessel seat comprises a pair of closely-spaced raised surfaces, whereby the vena cava may be securely seated at said vessel seat by ensnaring the vena cava between said pair of raised surfaces.

4. (Original) The cardiac isolation catheter of claim 2, wherein said vessel seat comprises a pair of closely-spaced raised surfaces, and wherein said body has a suction lumen extending longitudinally therein and communicating with a suction port situated between said pair of closely-spaced raised surfaces, whereby the vena cava may be securely seated at said vessel seat by application of suction to said suction lumen.

5. (Original) The cardiac isolation catheter of claim 2, wherein at least one of said distal vessel seat and said proximal vessel seat is expandable.

6. (Original) The cardiac isolation catheter of claim 5, wherein said expandable vessel seat comprises a balloon attached to said body and having an interior which communicates with an inflation lumen extending longitudinally in said body, whereby the vena cava may be securely seated at said vessel seat by expanding said balloon after positioning said catheter in the vena cava of the mammal.

7. (Original) The cardiac isolation catheter of claim 6, wherein both of said distal vessel seat and said proximal vessel seat are balloons attached to said body and having interiors which communicate with said inflation lumen.

8-19. (Canceled)

20. (Original) A kit for isolating the heart of a mammal from the rest of the circulatory system of the mammal, said kit comprising

(a) cardiac isolation catheter insertable within the vena cava of a mammal, said catheter comprising

- (i) a hollow tubular body having a venous blood flow lumen extending longitudinally therein, a proximal end, at least one access lumen extending therein from said proximal end, a distal end, a proximal port, and a distal port;
- (ii) a distal vessel seat attached to said body; and
- (iii) a proximal vessel seat attached to said body;

wherein said cardiac isolation catheter is positionable within the vena cava of the mammal such that one vessel seat is positioned in the superior vena cava of the mammal between the right atrium and the junction of the brachiocephalic veins and the other vessel seat is positioned in the inferior vena cava between the right atrium and the hepatic veins, wherein said distal port is located distally with respect to said distal vessel seat, and wherein said proximal port is located proximally with respect to said proximal vessel seat, whereby blood in the junction of the brachiocephalic veins and blood in the hepatic veins is in fluid communication with said venous blood flow lumen by way of said ports;

- (b) a second catheter insertable within said access lumen of said cardiac isolation catheter, said second catheter having a distal portion and an inflation lumen extending longitudinally therein and comprising a balloon on the distal portion thereof, wherein the interior of said balloon of said second catheter is in fluid communication with said inflation lumen of said second catheter; and
- (c) an endoaortic catheter comprising a flexible rod having a distal portion and a distal tip, and an aortic vessel seat attached to the distal portion of said flexible rod.

21-48. (Canceled)

49. (Original) A method of providing an agent to a single compartment selected from the group consisting of the cardiac circulation of a mammal and the non-cardiac, non-pulmonary circulation of the mammal, said method comprising isolating the cardiac circulation from the non-cardiac, non-pulmonary circulation and providing the agent to said single compartment.

50. (Original) The method of claim 49, wherein said cardiac circulation is isolated from said non-cardiac, non-pulmonary circulation by

(1) inserting a caval catheter into the vena cava of the mammal, said caval catheter comprising

- (a) a hollow tubular body having a venous blood flow lumen extending longitudinally therein, a proximal end, a distal end, a proximal port, and a distal port
- (b) a distal vessel seat attached to said body; and
- (c) a proximal vessel seat attached to said body,

wherein said catheter is positioned within the vena cava of the mammal such that one vessel seat is positioned in the superior vena cava between the right atrium and the junction of the brachiocephalic veins and the other vessel seat is positioned in the inferior vena cava between the right atrium and the hepatic veins, wherein said distal port is located distally with respect to said distal vessel seat, and wherein said proximal port is located proximally with respect to said proximal vessel seat,

(2) seating the vena cavae against said distal and proximal vessel seats,

(3) inserting an endoaortic catheter comprising an aortic vessel seat into the aorta of the mammal, and

(4) seating the aorta against the vessel seat,

whereby said cardiac circulation is isolated from said systemic circulation.

51. (Original) The method of claim 50, further comprising occluding the pulmonary artery of the mammal.

52. (Original) The method of claim 51, wherein the pulmonary artery of the mammal is occluded by threading a second catheter comprising an arterial vessel seat through a lumen extending longitudinally within said caval catheter, through an access port located between said vessel seats of said caval catheter, through the right atrium and right ventricle of the mammal's heart, and into the pulmonary artery of the mammal, and then seating the pulmonary artery against said arterial vessel seat.

53. (Original) The method of claim 50, further comprising occluding the azygous vein of the mammal.

54. (Original) The method of claim 49, wherein said cardiac circulation is isolated from said non-cardiac, non-pulmonary circulation by

- (1) inserting a superior caval return catheter comprising a vessel seat into the superior vena cava of the mammal,
- (2) inserting an inferior caval return catheter comprising a vessel seat into the inferior vena cava of the mammal,
- (3) seating the superior vena cava against said vessel seat of said superior caval return catheter,
- (4) seating the inferior vena cava against said vessel seat of said inferior caval return catheter,
- (5) inserting an endoaortic catheter comprising an aortic vessel seat into the aorta of the mammal, and
- (6) seating the aorta against the vessel seat,

whereby said cardiac circulation is isolated from said systemic circulation.

55. (Original) The method of claim 54, further comprising occluding the pulmonary artery of the mammal.

56. (Original) The method of claim 55, wherein the pulmonary artery of the mammal is occluded by threading a second catheter comprising an arterial vessel seat through a lumen extending longitudinally within one of said superior caval return catheter and said inferior caval return catheter, through the right atrium and right ventricle of the mammal's heart, and into the pulmonary artery of the mammal, and then seating the pulmonary artery against said arterial vessel seat.

57. (Original) The method of claim 54, further comprising occluding the azygous vein of the mammal.

58. (Original) The method of claim 49, wherein said agent is selected from the group consisting of a pharmaceutical composition, a composition comprising an imaging agent, and a gene vector.

59. (Original) The method of claim 58, wherein said gene vector is selected from the group consisting of an adenovirus vector and an adeno associated vector.

60. (Original) The method of claim 49, wherein at least one of said cardiac circulation and said non-cardiac, non-pulmonary circulation is connected with an extracorporeal oxygenating unit.

61. (Canceled)